

U.S. Serial No. 09/747,774

Group Art Unit: 1646

***In the Claims:***

The below listing of claims will replace all prior versions, and listings, of claims in the application:

1.     **(Previously Presented)**     A mixture of recombinant yeast cells, each cell of which comprises:
  - (i)   a recombinant gene encoding a heterologous orphan G protein-coupled receptor wherein said receptor is expressed on the cell membrane of said cell such that signal transduction activity is modulated by interaction with an extracellular signal; and
  - (ii)  a recombinant gene encoding a heterologous test polypeptide, wherein the test polypeptide is transported to a location allowing interaction with the receptor expressed on the cell membrane,wherein collectively the mixture of cells expresses a library of said test polypeptides, and modulation of the signal transduction activity of the receptor by a heterologous test polypeptides within the library provides a detectable signal.
2.     **(Previously Presented)**     A mixture of recombinant yeast cells, each cell of which comprises:
  - (i)   a heterologous orphan G protein-coupled receptor wherein said receptor is expressed on the cell membrane of said cell such that signal transduction activity is modulated by interaction with an extracellular signal;
  - (ii)  a recombinant gene encoding a heterologous test polypeptide, receptor, wherein the test polypeptide is transported to a location allowing interaction with the receptor expressed on the cell membrane; and
  - (iii) a reporter gene construct containing a reporter gene in operative linkage with one or more transcriptional regulatory elements responsive to the signal transduction activity of the receptor,wherein collectively the mixture of cells expresses a library of test polypeptides.
- 3-4.   **(Cancelled)**
5.     **(Previously Presented)**     A mixture of recombinant yeast cells, each cell of which comprises:

U.S. Serial No. 09/747,774

Group Art Unit: 1646

- (i) an orphan G protein-coupled receptor wherein said receptor is expressed on the cell membrane of said cell such that signal transduction activity is modulated by interaction with an extracellular signal;
  - (ii) a recombinant gene encoding a heterologous test polypeptide and including a signal sequence for secretion, wherein the test polypeptide is transported to a location allowing interaction with the receptor expressed on the cell membrane; and
  - (iii) a reporter gene construct containing a reporter gene in operative linkage with one or more transcriptional regulatory elements responsive to the signal transduction activity of the receptor,
- wherein collectively the mixture of cells expresses a library of test polypeptides.

**6-7. (Cancelled)**

**8. (Previously Presented)** A mixture of recombinant yeast cells, each cell of which comprises:

- (i) an orphan G protein-coupled receptor wherein said receptor is expressed on the cell membrane of said cell such that signal transduction activity is modulated by interaction with an extracellular signal; and
- (ii) a recombinant gene encoding a heterologous test polypeptide and including a signal sequence for secretion, wherein the test polypeptide is transported to a location allowing interaction with the receptor expressed on the cell membrane,

wherein collectively the mixture of cells expresses a library of test polypeptides, and modulation of the signal transduction activity of the receptor by a test polypeptide within the library provides a detectable signal.

**9. (Previously Presented)** The mixture of claim 8, wherein each cell further comprises a reporter gene construct containing a reporter gene in operative linkage with one or more transcriptional regulatory elements responsive to the signal transduction activity of the receptor, expression of the reporter gene providing the detectable signal.

**10. (Previously Presented)** The mixture of claim 8, wherein the reporter gene encodes a gene product that gives rise to a fluorescence detectable signal.

U.S. Serial No. 09/747,774

Group Art Unit: 1646

11. **(Previously Presented)** The mixture of claim 9, wherein the reporter gene encodes a beta-galactosidase gene product.

12-16. **(Cancelled)**

17. **(Previously Presented)** The mixture of claim 8, wherein each cell further comprises a heterologous gene construct encoding the receptor.

18-24. **(Cancelled)**

25. **(Previously Presented)** The mixture of claim 8, wherein the variegated population of test polypeptides includes at least  $10^3$  different test polypeptides.

26. **(Previously Presented)** A recombinant yeast cell, comprising:

- (i) a recombinant gene encoding a heterologous G protein-coupled receptor protein wherein said receptor is expressed on the cell membrane of said cell such that signal transduction activity is modulated by an extracellular signal;
- (ii) a recombinant gene encoding a heterologous test polypeptide, wherein the test polypeptide is transported to a location allowing interaction with the receptor expressed on the cell membrane; and
- (iii) a reporter gene construct containing a reporter gene in operative linkage with one or more transcriptional regulatory elements responsive to the signal transduction activity of the receptor.

27. **(Previously Presented)** The recombinant cell of claim 26, wherein the reporter gene encodes a fluorescence gene product that gives rise to a fluorescence detectable signal.

28-35. **(Cancelled)**

36. **(Previously Presented)** The recombinant cell of claim 26, which yeast cell is a *Saccharomyces* cell.

37. **(Previously Presented)** The recombinant cell of claim 26, which yeast cell is a *Schizosaccharomyces* cell.

U.S. Serial No. 09/747,774

Group Art Unit: 1646

38. (Cancelled)

39. (Previously Presented) A mixture of recombinant yeast cells, each cell of which comprises:

- (i) a recombinant gene encoding a heterologous orphan G protein-coupled receptor wherein said receptor is expressed on the cell membrane of said cell such that signal transduction activity is modulated by interaction with an extracellular signal;
- (ii) a recombinant gene encoding a heterologous test polypeptide and including a signal sequence for secretion, wherein the test polypeptide is transported to a location allowing interaction with the receptor expressed on the cell membrane; and
- (iii) a reporter gene construct containing a reporter gene in operative linkage with one or more transcriptional regulatory elements responsive to the signal transduction activity of the receptor,

wherein collectively the mixture of cells expresses a library of test polypeptides.

40-49. (Cancelled)

50. (Previously Presented) The mixture of claim 39, which yeast cell is a *Saccharomyces* cell.

51. (Previously Presented) The mixture of claim 39, which yeast cell is a *Schizosaccharomyces* cell.

52. (Cancelled)

53. (Previously Presented) The mixture of claim 39, wherein the variegated population of test polypeptides includes at least  $10^3$  different test polypeptides.

53-76. (Cancelled)

77. (Previously Presented) The mixture of any of claims 1, 2, 5, 8 or 39, wherein the G protein-coupled receptor is selected from the group consisting of a

U.S. Serial No. 09/747,774

Group Art Unit: 1646

chemoattractant peptide receptor, a neuropeptide receptor, a light receptor, a neurotransmitter receptor, a cyclic AMP receptor, and a polypeptide hormone receptor.

78. **(Previously Presented)** The recombinant yeast cell of claim 26, wherein the G protein-coupled receptor is selected from the group consisting of a chemoattractant peptide receptor, a neuropeptide receptor, a light receptor, a neurotransmitter receptor, a cyclic AMP receptor, and a polypeptide hormone receptor.